

REMARKS

Claims 1-9, 11-20 and 25-45 are pending in this application. By this Amendment, claims 10 and 21-24 are cancelled, claim 11 is amended and new claims 29-45 are added. Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version With Markings To Show Changes Made."

Applicants confirm that an election was made with traverse to prosecute the subject matter of Group I, claims 1-20 and 25-28. While Applicants disagree with the restriction requirement, Applicants have cancelled non-elected claims 21-24 in an effort to further prosecution.

The Office Action objects to the drawings because the drawings are improperly cross-hatched. Formal drawings were filed for this application on November 14, 2001. A copy of the Letter Submitting Formal Drawings and the formal drawings are attached to this amendment. The formal drawings do not include the respective cross-hatching, which was objected to in the Office Action. Withdrawal of the objection to the drawings is respectfully requested.

The Office Action indicates that Figures 1-3 should be designated as --Prior Art--. Applicants respectfully disagree. The application does not indicate that Figures 1-3 are prior art. Additionally, applicants cannot state with certainty that these figures represent prior art. As such, the figures are not labeled as prior art.

The Office Action rejects claims 1-20 and 25-28 under 35 U.S.C. §103(a) over U.S. Patent 5,734,556 to Saneinejad et al. (Saneinejad) in view of U.S. Patent 5,881,800 to Chung, and U.S. Patent 5,115,375 to Garay. Applicants initially note that this rejection does not include an “and” or an “or” between Chung and Garry. Therefore, applicants are uncertain whether the rejection is a combination of the three references or the rejection is a combination of Saneinejad with one of the other two references. In an effort to further prosecution, applicants will address the rejection as if it is based on a combination of the three references.

The present application discloses the use of a barbed-shaped tip at the end of a through hole mount anchor lead. See Figure 4. The barb-shaped tip may be designed to compress slightly as the anchor is inserted from one side of the board (Figure 5) and then to expand slightly when it exits the other side of the board (Figure 6). The barb is designed to attract and retain a significant amount of solder when the board is wave soldered. More specifically, Figure 4 shows the cone-shaped barbs 125 and 135. Figure 7 additionally shows solder 160 provided between the cone shaped barbs 125 and the bottom face 15 of the printed circuit board 10. That is, the cone shaped barbs 125 and 135 catch and retain additional solder so as to provide more strength to the anchor 100.

Saneinejad discloses a header 30 that includes a wire 38 bent into a U-shape. A spacer 40 is attached to the U-shaped wire 38 to create a pair of wire posts 42 to extend from one side of the spacer 40 and a wire loop 44. See Fig. 2. The posts 42 are preferably soldered to holes formed in a printed circuit board 14.

See Fig. 1. The posts 42 are covered with a layer of solder before insertion into the plated through holes so that the headers 30 can be attached to the printed circuit board 14 with a wave solder process. See column 2, lines 35-49.

Chung discloses a heat sink fastener 20 that is fastened to a mother board 10 and a heat sink 12 to secure the mother board 10 to the heat sink 12. The Office Action appears to rely on Chung's Figure 2 and 3. As shown in these figures, a downwardly extended arrowhead locating bolt 208 having a neck 2081 downwardly extended from the smoothly arched bottom clamping wall 206 and two symmetrically pairs of shoulders 2082, and two horizontal wings 2080 bilaterally extend from the connecting area between the arrowhead located bolt 208 and the smoothly arched bottom clamping wall 206.

Finally, Garay discloses a retainer sleeve 10 provided with a leading end portion 14 and opposing trailing end portions 16. See Figure 1. The tapered leading end portion 14 protruding from the device 44 is inserted into an aperture 45 in a support panel 46. In the inserted leading end portion 14 of the sleeve 10, the distal end portions 38 and 40 of flexible legs 26 and 28 have convergently extended portions brought into rubbing engagement with the entrance rim of aperture 45. The distal end portions 38 and 40 force the spaced terminal ends of the distal end portions 38 and 40 to move laterally toward one another. The resulting decrease in diametric size of the leading end portion 14 allows the end portions 38 and 40 of the flexible legs 26 and 28 to pass through the aperture 45. When the end portions 38 and 40 clear the surface 48, the resiliency of legs 26 and 28 causes the respective

end portions 38 and 40 to spring apart. As a result, the end portions 38 and 40 flare outwardly from the portions 30 and 32 and snap into latching engagement with the surface 47 of panel 46 adjacent to the exit rim of aperture 45. See column 5, lines 27-62.

Independent claim 1 recites that the first leg includes a compressible section to compress when inserted into the first hole and to expand after passing through the first hole. The compressible section to support solder between the compressible section and the second face. The cited references do not teach or suggest at least these features of claim 1. That is, none of the cited references teaches or suggests that a compressible section supports solder between the compressible section and the second face. The Office Action admits that Saneinejad does not teach or suggest this feature. The Office Action states that legs with compressible ends are known in the art. The Office Action then cites Chung and Garay as examples. However, neither Chung nor Garay suggest the claimed features. Thus, the Office Action fails to make a *prima facie* case of obviousness.

Chung does not rely on the use of solder in combination with any type of compressible section. Additionally, Garay does not teach or suggest a first leg including a compressible section to compress when inserted into the first hole and to expand after passage through the first hole in combination with the compressible section to support solder between the compressible section and the second face. More specifically, Garay does not teach or suggest a compressible section that supports solder between the compressible section and the second face. That is,

Garay teaches that solder may be wave soldered over the end portions 38 and 40, Garay does not teach or suggest a compressible section that supports solder.

Additionally, Garay's sleeve 10 (Figure 1) includes two separate legs 26 and 26. Leg 26 supports the end portion 38 and leg 28 supports the end portion 40. Claim 1 specifically recites that the leg includes a compressible section. Garay's leg 38 does not include a compressible section, and Garay's leg 40 does not include a compressible section. Each of the legs 38 and 40 does not separately compress and expand. Therefore, Garay does not teach or suggest the claimed leg having a compressible section as set forth in claim 1. Furthermore, Garay does not teach or suggest that the compressible section supports solder between the compressible section (of a leg) and the second face. That is, as clearly shown in Figure 8, the solder is provided over an outer surface of each of the end portions 38 and 40. This is done by wave soldering.

For at least the reasons set forth above, it is respectfully submitted that the cited combination does not teach or suggest all the features of the claim 1. Independent claim 1 therefore defines patentable subject matter. Each of independent claims 11, 17, 25 and 45 define patentable subject matter for at least similar reasons as claim 1. More specifically, independent claim 11 recites the first leg includes means for compressing when inserted into the first hole and for expanding after passing through the first hole, the means for compressing to support solder on the second face. Independent claim 17 recites a compressible section to compress when inserted into the first hole and to expand after passing through the

first hole, the compressible section to support solder between the anchoring mechanism and the first hole. Independent claim 25 recites that the first leg includes a first solder retention section on a tip of the first leg and a second solder retention section on a tip of the second leg. Additionally, independent claim 45 recites that the first leg includes barbs provided at a tip of the first leg, the barbs to compress when inserted into the first hole and to expand after passing through the first hole, the barbs to support solder between the barbs and the second face.

Claims 2-9 and 29-32 depend from claim 1, claims 12-16 and 33-36 depend from claim 11, claims 18-20 and 37-40 depend from claim 17 and claims 26-28 and 41-44 depend from claim 25 and therefore also define patentable subject matter.

In addition, the dependent claims also recite features which further and independently distinguish over the applied prior art. For example, dependent claim 3 (and similarly claims 12, 19 and 27) recites that the compressible section comprises cone shaped barbs provided on an end of the first leg. The cited combination does not suggest these features. In rejecting claim 3, the Office Action merely asserts that Saneinejad's Figure 2 with modifications shows these features. However, Saneinejad merely shows posts 42 that extend through printed circuit board 14. The posts 42 are not cone-shaped barbs provided on an end of a first leg. See, for example, the cone-shaped barbs 125 and 135 shown in Figure 4 of the present application. Thus, dependent claims 3, 12, 19 and 27 define patentable subject matter at least for this reason.

Dependent claim 29 (and similarly claims 33, 37 and 41) recites that the cone-shaped barbs comprise a plurality of barb fingers each extending from a tip of the first leg toward the second face. Furthermore, dependent claim 30 (and similarly claims 35, 39 and 42) recites that the compressible section includes a plurality of barb fingers each extending from a tip of the first leg toward the second face. Still further, dependent claim 31 (and similarly claims 35, 39 and 43) recites that the compressible section includes a plurality of barb fingers each having a respective first end and a respective second end. Each first end coupled to a tip of the first leg and extending toward the second face. A space is provided between each second end and the second face, and solder is provided between each of the fingers and the second face. Dependent claim 32 recites each first end coupled to the first leg and extending toward the second face, and solder provided between each of the second ends and the second face.

For at least the reasons set forth above, the cited references do not teach or recite each of the specific features of claims 29-44. That is, the cited references do not teach or suggest cone-shaped barbs or each of the barb fingers extend from a tip of the first leg towards the second face. Additionally, the cited references do not teach or suggest a space provided between each second end (or each finger) and the second face, and solder provided between each of the second ends (or fingers) and the second face. Thus, each of claims 29-44 defines patentable subject matter for at least these additional reasons.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the above- identified application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-9, 11-20 and 25-45 are respectfully requested.

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Respectfully submitted,

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Attachment:

Previously filed Letter Submitting Formal Drawings

"Version With Markings To Show Changes Made"

IN THE CLAIMS:

Claim 11 has been amended as follows:

11. (Amended) [The apparatus of claim 10] An apparatus comprising:
a printed circuit board having a first face and a second face, said printed
circuit board including a first hole extending between said first face and said second
face;
a component to mount on said first face; and
means for retaining solder in said first hole and on said second face, said
means for retaining comprising an arm to couple to said component and a through
hole mount anchor to couple to said printed circuit board, said arm to couple to said
anchor so as to secure said component to said printed circuit board, said through
hole mount anchor including a loop to extend from said first face of said printed
circuit board, and a first leg to extend through said first hole of said printed circuit
board and extend from said second face such that solder is retained in said first hole
and on said second face, wherein said first leg includes means for compressing
when inserted into said first hole and for expanding after passing through said first
hole, said means for compressing to support solder on said second face.